Atlantic Richfield Company

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February 5, 2013

Mr. Steven Way
On-Scene Coordinator
Emergency Response Program (8EPR-SA)
US EPA Region 8
1595 Wynkoop Street
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Delivered via e-mail

Subject: January 2013 Monthly Progress Report
Rico-Argentine Mine Site – Rico Tunnels
Operable Unit OU01, Rico, Colorado

Dear Mr. Way,

This progress report describes activities conducted during the month of January, 2013 at the Rico-Argentine Mine Site and activities anticipated to occur during the upcoming month. These activities are organized by task as identified in the Removal Action Work Plan. This progress report is being submitted in accordance with Paragraph 35.a of the Unilateral Administrative Order for Removal Action (the "UAO"), dated March, 2011.

ACTIVITIES FOR JANUARY

This section describes significant developments during the preceding period including actions performed and any problems encountered during this reporting period.

Site-Wide Activities

- Digital archives continue to be reviewed by the Atlantic Richfield project team for information that may provide a better understanding of the Rico site.
- The Winter Operations Plan was updated and winter operations training was conducted including snowmobile training, snow track mounted all-terrain vehicle (ATV) training, winter survival training, and avalanche awareness training, for Rico water sampling and wetland pilot activities.
- Started avalanche hazard studies of the St. Louis Ponds Site and the Argentine Mill Site/Access Road.
- Initiated avalanche monitoring specific to site conditions and access routes.
- Conducted site specific avalanche hazard forecasting.
- A project status update and 2013 planning meeting was held in Denver on January 29, 2013 with US EPA, Atlantic Richfield and consultants.
- During the meeting with US EPA on January 29, 2013, a draft revision to Section 8.0 – Schedule, of the Rico Argentine Mine Site – Unilateral Administrative Order for Removal Action was provided to US EPA for consideration.

Task A – Pre-Design and Ongoing Site Monitoring

- Review and post October Surface Water Sampling Report and cross sectional transect data to the project SharePoint site in early February 2013. **(https://extranet.aecom.com/sites/ricostlouis/SitePages/Home.aspx)**

- The December water sampling event was initiated in December 2012 and completed first week of January 2013. The sampling was completed at this time due to severe weather and avalanche conditions in Rico and at the St Louis Ponds area. The January water sampling event was accomplished between January 21, 2013 and January 31, 2013.
- December sampling event groundwater samples were obtained from the following groundwater wells: GW-1, GW-3, GW-4, GW-5, GW-6, GW-7, EB-1, EB-2, MW-101, MW-102, MW-103, MW-104, MW-204, CHV-101, P13-102, P13-103, MW-1 DEEP, MW-1 SHALLOW, MW-2 DEEP, MW-3 DEEP, MW-4 DEEP, MW-4 SHALLOW, MW-5 DEEP, MW-5 SHALLOW, MW-6 DEEP, and MW-6 SHALLOW. The following wells were found to be dry: MW-202, MW-2 SHALLOW, and MW-3 SHALLLOW.
- December sampling event surface water samples were collected from DR-3, DR-4, DR-5 and DR-6.
- December sampling event Dolores River water samples and flow measurements were not collected due to ice cover over the river surface.
- January sampling event groundwater samples and water levels were obtained from the following groundwater wells: GW-1, GW-3, GW-4, GW-5, GW-6, EB-1, EB-2, MW-101, MW-102, MW-103, MW-104, MW-204, CHV-101, P13-102, P13-103, MW-1 DEEP, MW-1 SHALLOW, MW-2 DEEP, MW-3 DEEP, MW-4 DEEP, MW-4 SHALLOW, MW-5 DEEP, MW-5 SHALLOW, MW-6 DEEP, and MW-6 SHALLOW. The following wells were found to be dry: MW-202, MW-2 SHALLOW, and MW-3 SHALLLOW.
- January sampling event surface water samples were collected from locations DR-3, DR-4, DR-5 and DR-6.
- January sampling event Dolores River water samples and flow measurements were collected from DR-2 and DR-7. Grab samples as well as multi-point composite samples were obtained from the two referenced river locations.
- During January, flumes were inspected for debris and ice buildup. The flumes were cleared as required.
- Downloaded available flume data for December 2012 and part of January 2013 from the Parshall flume data loggers. The most recent data was obtained from the OTT PLS pressure transducer at north flume (DR-3) and from OTT Orpheus Mini at south flume (DR-6). The data will be posted to the project data SharePoint site in early February.
- Data from the pressure transducer located in angle borehole AT-2 was not collected due to snow and avalanche hazard within the St Louis Tunnel cut area. Safe access will be assessed for future data collection.
- Conducted inspection of the pond system spillways, pipes, water levels and general conditions. Overall condition of the pond good. All spillways and pipes observed to be flowing without obstructions or excessive icing.
- Continued work on overall site Data Management System (EQuIS) development. Web site with data in tabular format has been set up and is currently being tested and refined. Completed setup of some standard data queries to retrieve the data that is needed. Web site for querying data from a map is nearing completion.

Task B – Management of Precipitation Solids in the Upper Settling Ponds

- St. Louis adit discharge water was diverted to Pond 15 during January 2013. Pond 18 has not been in use during January due to seeps and leakage from a partially buried historic plastic pipe between Pond 18 and 15 observed in November.
- Pond 18 was closely monitored for seepage conditions and no leaks or seeps were observed as could be seen with snow cover during January 2013. Pond 18 is currently frozen over and not in use.
- The St Louis Pond system embankments, flow and general conditions were inspected during January 2013. The ponds have adequate freeboard. Flow into and between the ponds is not blocked, and the overall condition of the embankments appears good.

Task C – Design and Construction of a Solids Repository

- Continued work on geotechnical analyses of alternative solids drying facility and repository sites, focusing current attention on Pond 13.

Task D – Hydraulic Control Measures for the Collapsed Area of St. Louis Tunnel Adit

- Evaluation continued of tunneling and open-cut alternatives to access the Hermosa Formation in the St. Louis Tunnel as the target location of installation of hydraulic controls.
- Submitted a letter to US EPA on January 30, 2013 requesting that the completion date for additional investigation of the collapsed area of the St. Louis Tunnel Adit be revised to July 2013, and the subsequent Preliminary Design Report submittal date be revised to September 30, 2013. US EPA approved the request on January 31, 2013.

Task E – Source Water Investigations and Controls

- Continued Blaine Tunnel monitoring.
  - Water depth measurements have been collected from behind the Blaine Coffer Dam on a continuous basis via a pressure transducer. Data was last downloaded from the pressure transducer on December 12, 2012.
  - Water flow has been monitored on a continuous basis via an ultrasonic level sensor installed in the Blaine Flume. Flow data from the flume was last downloaded on January 9, 2013.
- Started preparation of a treatability study report to document implementation of the 517 Shaft injection test and interpretation of results.

Task F – Water Treatment System Analysis and Design

- Continued constructed wetland pilot scale testing.
  - Began the first pilot testing run targeting an effluent flow rate of approximately 1.5 gallons per minute (gpm) on January 3, 2013.
  - Performed sampling and monitoring in general accordance with the Sampling and Analysis Plan (SAP). Occasionally, inclement weather and unsafe site conditions have resulted in less frequent sampling and monitoring.
  - Deployed multi-parameter water quality sondes (sondes) on January 8, 2013 in the inlet flow control box, rock drain and wetland monitoring ports, and wetland outlet to evaluate continuous water quality parameter measurements with the sondes. The frequency of site visits for water quality parameter measurements may be reduced following an evaluation of the accuracy and reliability of the sonde data.
  - Collected water samples from the inlet flow control box, rock drain monitoring port, and wetland outlet and submitted for laboratory analysis on January 4, 9, 16 and 22, 2013.
  - Conducted hydrogen sulfide surveys following observations of organic odor at the wetland. The results of these surveys confirmed that hydrogen sulfide is off-gassing from the wetland.
- Began preparation of a technical memorandum to document construction and pre-implementation activities of the constructed wetland pilot scale test.
- Completed limited bench-scale testing to further evaluate additional passive treatment alternatives.
- Completed initial evaluation of ion exchange bench scale testing, currently preparing a technical memorandum to document the results of the testing.

ACTIVITIES FOR UPCOMING MONTH

This section describes developments expected to occur during the upcoming reporting period, including a schedule of work to be performed, anticipated problems and planned resolution of past or anticipated problems.

Site-Wide Activities

- Review and post October and November 2012 Surface Water Sampling Report and cross sectional transect data to the project SharePoint site in February 2013. (https://extranet.aecom.com/sites/ricostlouis/SitePages/Home.aspx).
- Continue reviewing the digitally archived historic documents and maps.
- Continue Winter Operations avalanche hazard studies of the St. Louis Ponds Site and the Argentine Mill Site/Access Road.
- Conduct site specific avalanche hazard forecasting.
- Discussion with US EPA regarding a draft revision to Section 8.0 – Schedule, of the Rico Argentine Mine Site – Unilateral Administrative Order for Removal Action followed by a formal submittal of a revised schedule.

Task A – Pre-Design and Ongoing Site Monitoring

- Conduct surface water and groundwater sampling/analyses and flow measurements per protocols contained in the SAP.
- Update water SAP and QAPP to include new groundwater well sampling and river sampling protocols as appropriate. Also update QAPP to address EPA concerns provided to AR/BP representatives on January 29, 2013.
- Post surface water quality data to the SharePoint site after QA/QC review; and submit EQuIS data downloads to URS/EPA pending completion of EQuIS database.
- Download data from the Parshall flume data collectors and post to the project SharePoint site.
- Begin testing on the site Data Management System in preparation for system rollout.
- Complete monthly inspection of St. Louis Pond system. Perform detailed inspection of Pond 18 embankments and condition.

Task B – Management of Precipitation Solids in the Upper Settling Ponds

- Prepare work plan for solids removal during 2013.
- Continue evaluation of calcine tailings/Pond 18 solids SPLP and associated geochemical testing.

Task C – Design and Construction of a Solids Repository

- Continue evaluation of alternative locations, including Pond 13, as possible alternative treatment solids repository and/or drying facility sites.
- Continue geotechnical analyses and review to support design of a permanent drying facility and repository, including ongoing laboratory testing to address data gaps under the Supplement to FSP.
- Continue efforts to secure access to lands needed for a permanent drying facility and solids repository.

Task D – Hydraulic Control Measures for the Collapsed Area of St. Louis Tunnel Adit

- Monitor/download data from the transducer at drill hole AT-2 as winter access allows.
- Continue evaluation of tunneling and open-cut alternatives to access the Hermosa Formation in the St. Louis Tunnel as the target location of installation of hydraulic controls.

Task E – Source Water Investigations and Controls

- Continue Blaine Tunnel monitoring.
  - Continue logging pressure transducer data from behind the Blaine Coffer Dam and ultrasonic level sensor data from the Blaine Flume.
  - Download Blaine Coffer Dam and Blaine Flume pressure transducer and ultrasonic level sensor data, if weather and avalanche hazards permit site access.

- Continue preparation of a treatability study report to document implementation of the 517 Shaft injection test and interpretation of results.
- Begin evaluating additional injection testing at the 517 Shaft during high flows in the spring.
- Continue work on compilation of relevant historic mine workings and information from ongoing EPA studies into AutoCAD 3D model of the mine workings reporting to the St. Louis Tunnel.

Task F – Water Treatment System Analysis and Design

- Continue constructed wetland pilot scale testing.
  - Continue sampling and monitoring in accordance with the SAP.
  - Complete the first pilot testing run with an effluent flow rate of approximately 1.5 gpm.
  - Initiate the second pilot testing run by increasing the effluent flow rate to approximately 3 gpm.
  - Perform a tracer study to determine residence times of the rock drain and constructed wetland.
  - Conduct additional hydrogen sulfide surveys.
  - Complete preparation of a technical memorandum to document construction and pre-implementation activities of the constructed wetland pilot scale test.
  - Begin preparation of a technical memorandum to document the first pilot testing run of the constructed wetland pilot scale test.
- Begin evaluating constructed wetland demonstration.
- Begin preparation of a technical memorandum to document the limited bench-scale testing to further evaluate additional passive treatment alternatives.
- Continue evaluation of ion exchange bench scale testing and prepare a technical memorandum to document the results of the testing.
- Continue geotechnical analyses of flood dike and pond embankment seepage/piping and stability under static and seismic loading in support of final evaluation of long-term improvements.
- Continue scoping of additional data needs as necessary related to treatment system alternatives.

If you have any questions, please feel free to contact me at (951) 265-4277.

Sincerely,

Anthony R. Brown
Project Manager
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